

23. Epilepsy, Alcoholic.
24. Spinal Menengitis, no type.
25. Brights disease.

1911.

Jan.	15
Feb.	14
Mch.	7
Apr.	12
May	14
June	7
July	7
Aug.	14
Sept.	13
Oct.	18
Nov.	15
Dec.	14

150

### HYGIENIC LABORATORY OF THE STATE BOARD OF HEALTH.\*

Report by W. A. SAWYER, M. D., Berkeley.

At the beginning of the current year the State Board of Health established a Division of Epidemiology under the Bureau of the Hygienic Laboratory. As a result, we anticipate being able to do more than ever before in studying and controlling epidemics. The Division has already made decided progress along two lines of investigation, both of which depend to a great extent on the laboratory side of the work.

The first epidemiological study was that of the present epizootic of rabies. The pin map in the laboratory and our records of examinations of animals' heads show how the disease in California first became prevalent in Los Angeles in the summer of 1909. It spread over a large part of Southern California and finally crossed the Tehachapi mountains in January, 1911, when it appeared in Bakersfield. From there it moved steadily northward and became very prevalent in Kings, Tulare, and Fresno counties. North of this there had been, until recently, no indication of the disease except a few scattered cases. The disease is now present in Merced, Stanislaus, San Joaquin, and Contra Costa counties, and in San Francisco.

We have made 210 examinations of animals' heads for rabies at the State Hygienic Laboratory in the past two and one-half years. 149 of these showed positive evidence of rabies. The increase in the number of cases is indicated by the fact that in the first year and a half we had 44 positive cases, and in the last year, 105. The months showing the most examinations were those of the past winter.

In San Francisco we had a case in October, 1911, and no other until January 30, 1912. During February and March and the first half of

April, the laboratory of the Health Department of San Francisco examined 104 brains for rabies; 75 gave positive results. Two of the San Francisco cases were human and were confirmed by examinations in the city and state laboratories. Ten human deaths have occurred in California up to date; 7 in Southern California, one in the San Joaquin Valley, and two in San Francisco.

The second epidemiological investigation which I wish to call to your attention is a study of cases of typhoid fever among sailors. Some time ago it was noticed at the Marine Hospital in San Francisco that a great many typhoid cases came from a single ship. This was brought to the attention of the State Board of Health last December. Our investigation was carried on in two ways, by field work among the ships and by laboratory examinations. We found that a "carrier" on board a lumber steamer was responsible for twenty-seven cases. Four of these died. The cases from this "carrier" which were sent to the Marine Hospital represented one-fourth of all the cases of typhoid admitted to that hospital during nearly four years, and one-third of the deaths.

These two studies are examples of the kind of work which will be carried on by the Division of Epidemiology.

### DIAPHRAGMATIC PLEURISY.\*

A Stumbling Block in the Consideration of the Acute Abdomen.

By DANIEL CROSBY, M. D., Oakland.

In these days of rapid surgical advance, more and more those men who are doing only occasional surgery are operating upon patients who were heretofore left for the consideration and discretion of the surgical specialist.

The immediate and amazing relief which follows successful surgical intervention in acute conditions in the abdomen has placed the general public in a receptive mood leading to the ready acceptance of advice for operation with the result that many abdomens are opened before the operator has taken the pains to establish premises for his procedure, and in no group of cases perhaps is there more chance of error, and more demand for painstaking inquiry and observation than in those cases of abdominal pain in which a lesion above the diaphragm may be a causative factor.

Appendicitis, its dangers and disasters has set even the most poorly informed of the general public by the ears and a medical attendant who does not recognize it speedily, comes in for a full measure of condemnation. Furthermore, an increased interest in and understanding of evidence of ulceration of stomach and duodenum with the not infrequent resultant perforative peritonitis keeps medical men upon the qui vive to identify such catastrophes

\* Read before the Forty-Second Annual Meeting of the State Society, Del Monte, April, 1912.

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and operate for their relief at the earliest possible moment.

With a patient young or old in a marked condition of distress, with fever, vomiting, respiration labored and increased in frequency, anxious cast of countenance, high blood count, "nothing much showing in the lungs," and with a medical attendant who has a keen and bitter recollection of a patient lost because in the past he or a confrere had failed to recognize a perforated gastric ulcer, the temptation to open the abdomen is pressing. If this be done, a normal abdomen found, and a pneumonia discovered within the succeeding 48 hours "ether pneumonia" as an unfortunate complication covers up some sins of omission in diagnostic effort.

While there are many abdominal conditions upon which we may go astray the one to which most particularly we allude are perforated gastric or duodenal ulcer and appendicitis; and in referring to diaphragmatic pleurisy as a "stumbling block," the writer is not so much alluding to the more unusual simple pleurisy as to the basilar pneumonia which is so often masked for 24 or more hours and overshadowed by preponderating abdominal symptoms which take the observer far afield.

Medical literature is full of references to cases of this sort and if there be any virtue in this paper it will be merely that of serving to emphasize what J. P. Crozier Griffith refers to as the "Well recognized, long known, but frequently forgotten tendency of patients with pneumonia or pleurisy to refer their pain to the abdomen." (*Jour. Am. Med. Assn.*, Aug. 29, '03.) Numerous journal articles and most of our text books refer to the "well known abdominal onset" or the "well known abdominal pain" in certain cases of pneumonia, and most writers dismiss the subject with such a reference.

Osler (Practice, p. 651) says, "Intense subjective with trifling objective symptoms are always suggestive of diaphragmatic pleurisy," and men of close observation and wide experience become sufficiently adept to estimate at something like its true value, the complaint of abdominal pain. But what of the man who sees for the first time a rugged man or a sturdy child stricken suddenly with such an illness the very urgency of all the symptoms of which tends to confuse his efforts to eliminate or establish the value of any sign?

Case in point 1. J. B. French artist 46 years old. User of alcohol in all forms, denies lues. Had tracheotomy done in early childhood in Paris; wore a tube for a long time and has some constriction of the trachea which has always noticeably interfered with his breathing and given him a peculiar dry whistling cough—always without expectoration.

He also gives a long history of stomach trouble, nothing, however, indicative of ulcer, save such as his alcoholic history would suggest. When the writer was called to see him he was found sitting in a chair, weak and exhausted, covered with sweat and suffering from severe abdominal pain which was referred to practically the entire right half of the abdomen. There was no history of a chill and the pain had come on suddenly about 8 hours before, followed by vomiting and collapse. Vomiting occurred several times before and after seeing him.

His temperature was 100° F., respiration 32, pulse 130, small and weak. He was removed to a hospital at once and a very thorough examination made. His lungs were clear, his heart much enlarged as was also his liver. His abdomen was fat and distended and inasmuch as he was a very nervous man it was difficult to determine whether there was much abdominal relaxation during his morning expiration. Between his efforts at vomiting, his groaning, and his extreme restlessness he was a difficult subject for examination. But there was definite tenderness over the 10th, 11th and 12th ribs on the right while all of his pain was referred to his abdomen. During all of this time, and through the day and succeeding night this man dripped with sweat.

Blood count: White cells, 22,400; polynuclears, 89%; large mononuclears, 6%; small mononuclears, 5%.

He was given a small dose of heroin, sufficient to make life tolerable, and I remained at the hospital to watch him. About 2 a. m., 16 hours after he was first seen, by standing at the head of the bed and observing the patient's uncovered chest as he lay upon his back, the writer noted that the excursion of the right base of the chest was decidedly less than the left. We shaved the patient's very hairy chest and at the base of the right lung in the axillary line and posteriorly found a few rales at the end of inspiration. Six hours later he raised a little blood-stained mucus and our diagnostic problem was largely solved. Within another 24 hours effusion had occurred and he had no more pain.

This man had shock enough for an exploded appendix or a perforated gastric ulcer; he had a long history of gastric difficulty; he had pulse and temperature which would go with either condition, but though he really sought operation the facts that peristalsis had not ceased, that palpation did not increase pain, that some expiratory relaxation was obtainable; and that there was a diminution of excursion of the right chest, kept us out of his abdomen long enough to make a diagnosis.

Case 2. Sturdy colored child 7 yrs. old, taken suddenly with abdominal pain, rigidity, repeated attacks of vomiting and high fever. Attendant's diagnosis of appendicitis accepted by one, and rejected by another consultant in favor of pleurisy of the diaphragm. He was seen by the writer on the third day because the attendant was still convinced that the child had an exploded appendix and he felt that he should operate. History (obtained from mother) showed child had slight cough and was not quite well for one week before onset of urgent symptoms. Pain came on suddenly accompanied by persistent vomiting and high fever. The child was found lying slightly upon his right side, his respiration catchy, 42 per minute, alae nasi dilating at each inspiration and each grunting expiration, interrupted by a short, sharp cough. His pulse was 126, full and strong, his abdomen was distended and any effort to palpate it elicited cries of fear from the lad. By making firm, steady pressure, however, and by the exercise of a little patience, the abdomen could be palpated readily and the expiratory relaxation helped to eliminate peritonism from serious consideration. A shower of crepitant rales in the base of the right lung laterally and posteriorly cleared any remaining doubt; the attendant informed me that he had heard a few small rales on the evening before when the previous consultations were held but he thought that to be due to a hypostatic condition.

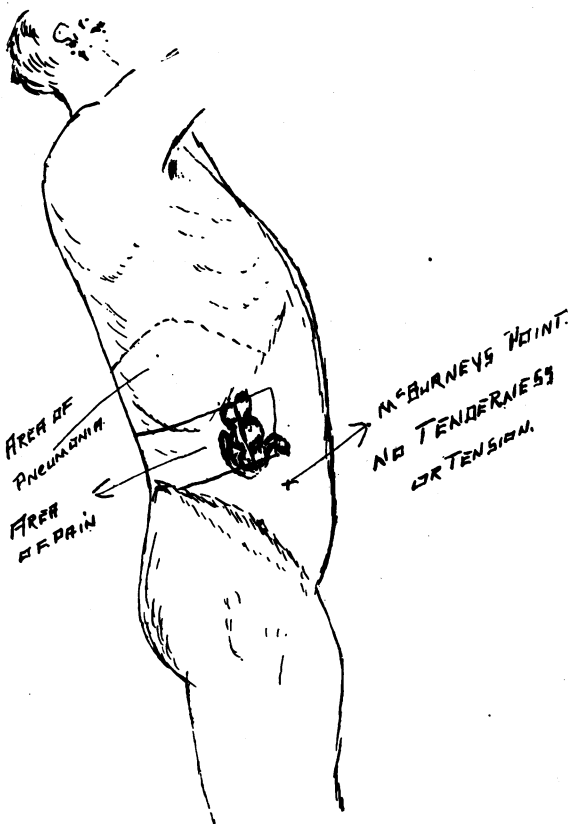
Case 3. A sturdy boy of 8 yrs. son of a physician, without premonitory symptoms complained of great pain, with rigidity of abdominal muscles, slight dry cough, spasmodic grunting, shal-

low respiration, temperature 101°, pulse 106, respiration 40, no previous history of cough. Chest was clear. The writer made a diagnosis of diaphragmatic pleurisy.

Blood count: Total whites, 15,400; polys., 80%.

Within a few hours this lad was seen by Drs. Wallace Terry and W. A. Clark and they concurred in the diagnosis. During the succeeding 24 hours a few small, crepitant rales were heard in the base of the left lung anteriorly, and then they disappeared as did all of the symptoms of distress and illness. Save for the blood findings, this was apparently a case of simple diaphragmatic pleurisy.

Case 4. V. H. G., age 8 yrs. Notes supplied by his father, a practicing physician. "The present illness was ushered in by a severe headache, and stupor with delirium at times, also gastric symptoms which were thought to be due to eating green cherries. After cleaning out the bowels he seemed to be a little better for about 2 days. Then he began to complain of severe pain which he located in the region of the appendix. At this time on making an examination I thought I discovered a friction sound on his right side."



He has given phenacetin and dover's powder, sufficient to control some of his pain, and on the 4th or 5th evening the lad's temperature arose to 105°. Dr. W. A. Clark was then called, the attendants feeling that the patient required surgical attention. By the time Dr. Clark arrived the boy had been lulled to sleep by the sedatives and his whole condition was masked. A few hours later, however, when it was the writer's privilege to see him, the lad's suffering was intense and his rigid, distended abdomen was not a comforting thing for any of us to look upon.

However, his disturbed pulse respiration ratio, his grunting respiration, his distended alae nasi, his expiratory abdominal relaxation all spoke of trouble above the diaphragm. A patch of dullness in the base of the right lung posteriorly with a shower of crepitant rales completed the picture. This boy passed through a severe pneumonia and afterwards

developed right-sided empyema which finally cleared.

Case 5. Supplied by Dr. Galbraith, father of the lad described as Case 4. Boy of 9 yrs. Had chill followed by headache, temp. 105°, severe pain in pit of stomach and in right shoulder, three days later there appeared a patch of dullness with fine rales at the end of inspiration at base of lung on left side. The boy passed through a typical pneumonia.

Case 6. Frenchman, 36 yrs. History of acute arthritis and pericarditis at 20. When apparently recovering from an attack of acute arthritis he developed a severe attack of abdominal pain with sweating, high temperature, and precordial distress.

Status: Patient pale and drenched with sweat, respiration 38, labored and catchy; pulse 136. Diminished excursion of left base anteriorly A. C. D. slightly increased. Auscultation; pericardial friction rub, as well as mitral and aortic regurgitant murmurs. Abdomen distended and rigid, but relaxed somewhat on expiration and pain was not increased by palpation though the patient's entire complaint was of abdominal pain and slight precordial distress. He had been given a laxative but no movement had occurred for 2 days.

A few hours later the patient died suddenly and the postmortem revealed a clear abdomen, pneumonia in base of left lower lobe anteriorly with diaphragmatic pleurisy; extensive adhesion between the pericardium and left lower lobe of lung, pericarditis and endocarditis.

This man was markedly prostrated, and practically all of his complaint was of his abdomen, yet the cause of his pain was above the diaphragm.

Case 7. H. C., 12 yrs. Sturdy boy. Had been feeling badly for 4 or 5 days and had slight cough. Taken ill suddenly with pain in right hypochondriac region, vomiting, headache and high fever. He was seen by the writer within 12 hours and found lying upon his right side breathing with difficulty and in great pain. His face was flushed, tongue dry and furred, alae nasi dilating with each inspiration, respiration 38, shallow and grunting. Temp. 103.5°, pulse 120. His abdomen was distended and absolutely rigid during inspiration but relaxed moderately during expiration. There was tenderness over the 11th and 12th ribs on the right side. His chest was clear, but upon viewing it from the head of the bed as the boy lay flat on his back a decided diminution in the excursion of the right chest was noted. Within 24 hours rales appeared in the right lower lobe laterally and most of the pain subsided although the tenderness over the 11th and 12th ribs remained. The boy passed through an ordinarily severe attack of pneumonia and on the 9th day the temperature dropped to 97°. During the night, however, the lad complained of more pain and I was called to see him early in the morning, to learn he was having pain in his right hypochondriac region especially posteriorly.

An area of thickening or rather of tension was present in the right hypochondrium and the lad complained of some pain upon moving his right leg. Blood count, 14,200; polys., 79%. A diagnosis of appendicular abscess with a probably undescended large bowel, was made and the lad removed to the hospital for operation. His temperature was 103° and he seemed very ill.

Operation revealed a retrocecal abscess which, because of the shortness of the ascending colon, was also practically a sub-hepatic abscess, and most of the appendix was disintegrated.

The lad returned to bed in very bad shape but he rallied and did very well for a few days, save that the right lung was slow in clearing up, and three weeks later it was necessary to re-operate to evacuate a very high subhepatic abscess. The lung is clearing up and the boy is now on the high road to recovery.

Here we had a boy who had a perfectly typical lobar pneumonia with evidence of abdominal pain most of which subsided within 48 hours upon the appearance of an effusion.

The whole pneumonic picture was complete and we again had our attention called to the abdomen. The state of disintegration in which the appendix was found proves beyond question that the attack of appendicitis was much more than 24 hours old, and we are in no way able to declare that the two conditions did not develop simultaneously.

There was no broadening of the abdomen, and this is probably due to the fact that the appendix was behind the colon and very high up. The sketch shows the location of the appendix and its abscess.

These case reports have been run through rapidly but no words of mine can depict the suffering experienced by a few of these patients who were manifesting "the well known abdominal pain," as an accompaniment of pneumonia.

If we consider pain, fever, headache, vomiting, abdominal rigidity, with its small, running pulse, as evidences of peritonism, we have the same symptoms to consider in cases of "abdominal onset" in pneumonia.

A few points we must bear in mind: 1, History and age of patient aids materially; 2, the onset of fever is more sudden, it goes higher and is more sustained in pneumonia; 3, headache and dry furred tongue more pronounced and occur earlier in pneumonia; 4, vomiting is more frequently repeated in pneumonia; 5, evidence of shock is practically always more marked in the abdominal condition though it may be simulated by pneumonia; 6, tender points may be found along the insertion of the diaphragm in pleuritic conditions; 7, abdominal rigidity occurs with the first evidence of pain in diaphragmatic difficulty but it awaits the occurrence of some peritonitis in the abdominal conditions. Patience in examination will reveal expiratory relaxation of abdomen where diaphragm alone is concerned.

From the standpoint of diagnosis we must reiterate the all but worn out adage "get your history" and let it be complete. History practically holds the key in the gastric or duodenal perforation cases. Having obtained the history, do not permit the apparent urgency of the symptoms to interfere with a painstaking examination. The man who finds a rigid abdomen will hunt for a head zone, he will try the legs for evidence of pain in the right psoas muscle, he will uncover the abdomen, and step to the foot of the bed to get an accurate impression of the respiratory excursion of the abdomen and its contour. But having done these things, he views the thorax from the same position, if at all, and rarely do we see a man uncover the chest and then go to the head of the bed and standing in a position to view both sides of the thorax from the median line thereby see and be able to judge the relative excursion of each side. If then he have a thoracic condition confronting him he will see quickly the limitation of excursion bespeaking a diaphragm arched up, like some lashed

colt in a quivering resistance to a second blow. The grunting, catchy respiration with these other signs ought to keep him from going astray in his findings.

#### Discussion.

Dr. I. W. Terry, San Francisco: I think it is a good thing to draw attention to these errors or possible errors. Personally I have been guilty of opening the abdomen three times in pneumonia or diaphragmatic pleurisies because I could not make the correct diagnosis. In one of them after the removal of a perfectly normal appendix a very careful examination of the lungs failed to show anything abnormal and it was not until 48 hours later that a diaphragmatic pneumonia was manifested. It is very possible that had we observed the excursions Dr. Crosby mentions we might have avoided this. In these examinations in stepping to the head of the bed and looking down, one should have the light coming from the foot or from the head. One can easily mistake the excursion of the diaphragm unless the light is arranged just right. One other point in the diagnosis—it seems to me that ordinarily the leukocyte count is higher in the beginning pneumonias than it is in the appendix or intra-abdominal cases. In one of my cases there was a leukocyte count of 24,000 with very marked rigidity of the abdomen but not enough localized tenderness to account for it and not until a number of hours later could pneumonia be diagnosed. The last case is very interesting from a diagnostic standpoint. Dr. Crosby certainly worked it out very admirably.

#### ANTITYPHOID VACCINATION.\*

By MAJOR BROOKE, U. S. Army.

Before taking up the prophylactic treatment of typhoid fever, I will preface my remarks by referring briefly to the morbidity and mortality of this disease in recent wars and in the United States at the present time.

During our civil war 80,000 cases of typhoid fever were recognized as such amongst the federal forces and probably as many more sick were accounted for under other heads, owing to the imperfect methods of diagnosis present at that period. In the Franco-Prussian war over 70,000 cases were reported in the German army. During the Spanish-American war about 20% of the men in the national encampments came down with the disease, of which 7% died, and it developed in 90% of the volunteer regiments within eight weeks of mobilization. In the South African war the British forces, consisting of 555,000 men, had 57,684 cases, of which 8,225 died. According to Osler about 500,000 people in this country incur enteric fever annually, with a mortality of from 35,000 to 40,000.

Certainly any measure capable of preventing typhoid fever or reducing the mortality of this ubiquitous disease is worthy of careful study and consideration.

Simmons and Frankel, as early as 1886, discovered that it was possible to immunize animals against the typhoid bacillus, by inoculating them with living cultures, but no further progress was made in this line until Brieger and Wassermann found out six years later that it was practicable to protect animals by the use of dead organisms.

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